



Department of
**Environment &
Conservation**

DOR Vapor Intrusion Update

TDEC Division of Remediation
Environmental Show of the South, Gatlinburg, TN
April 21, 2016

Overview

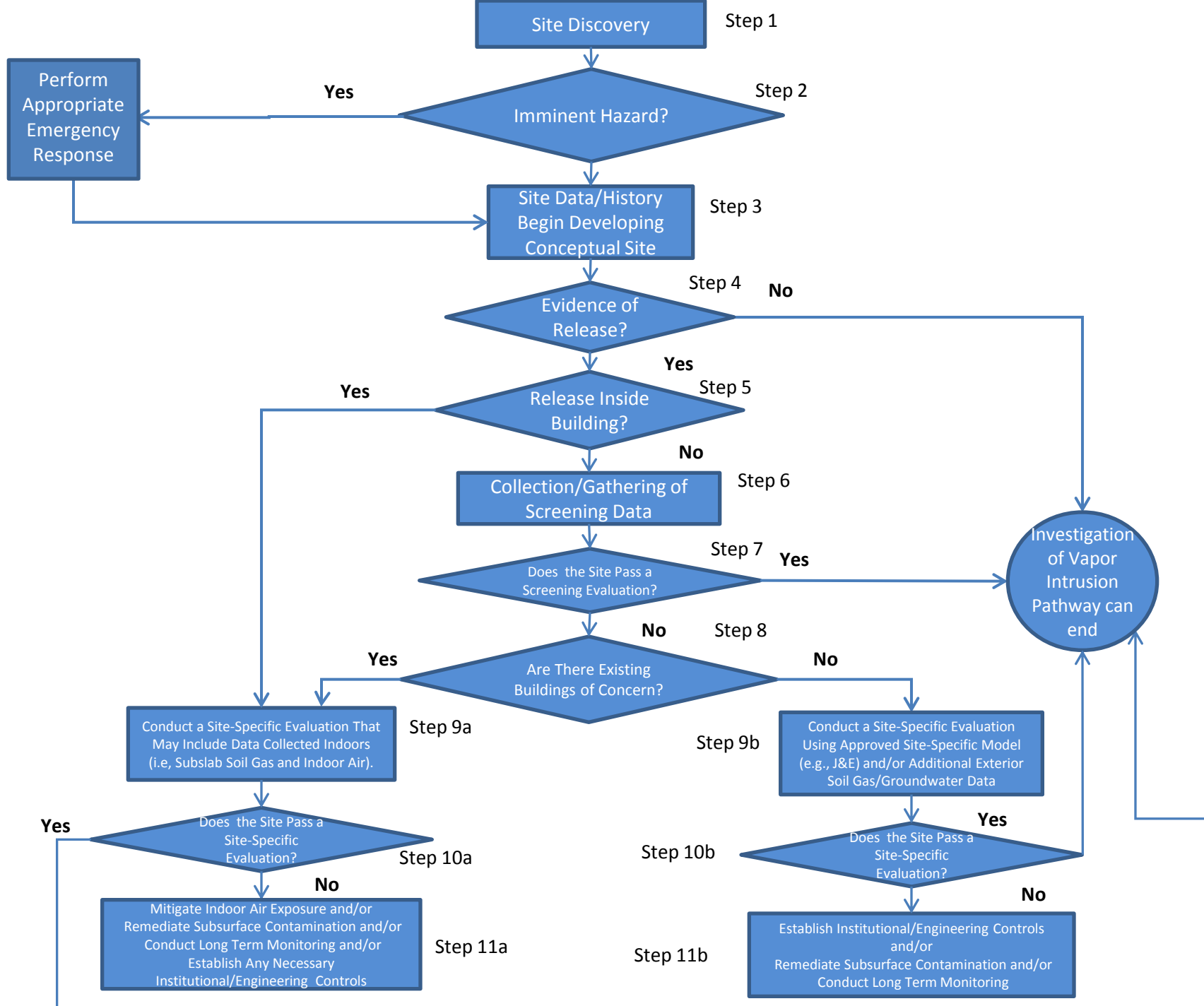
- DOR VI Flow Chart
- DOR VI Screening Levels
- DOR VI Mitigation Sites
- New EPA VI/PVI Guidance

DOR VI Flow Chart

- **Brief History**
 - **2012: TDEC VI Workgroup Formed**
 - **August 2014: Draft Released for Comments**
 - **September 2015: Final Suggested Revisions/Comments**
 - **February 2016: Finalized as DOR VI Flowchart**
- **March 31, 2016: “Live” on TDEC-DOR Website**

[Vapor Intrusion Investigation Process and Flow Chart](http://www.tn.gov/assets/entities/environment/attachments/rem_vapor-investigation-process-flow-chart.pdf)

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DOR Screening Levels

DOR Vapor Intrusion Screening Levels for Groundwater and Soil Gas (May 29, 2015)

- CR = 1E-06, HQ = 0.2
- Exclusivity of Provisions for Petroleum
 - Interpretation: DOR obligated to use UST cleanup criteria based on VI for GW and soil gas as screening values
 - Limited number of constituents
 - BTEX , Naphthalene, MTBE, EDB, EDC
 - UST has not developed subslab soil gas and indoor air screening levels

VI Mitigation

- **50+ DOR Sites with VIM Systems**
 - ~ 2X in past 1 ½ years
- **Types of Systems**
 - Active SSD
 - Passive Venting with Vapor Barrier
 - Passive Venting Only
 - Vapor Barrier Only
 - Floor Sealant

New VI Guidance

OSWER Technical Guide For Assessing And Mitigating The Vapor Intrusion Pathway From Subsurface Vapor Sources To Indoor Air (2015)

(aka, EPA VI Technical Guidance)

- Chlorinated VOCs
- Planning, Scoping, and Conducting Investigations
- Data Evaluation and Decision Making
- Engineering Exposure Control and Building Mitigation
- Mostly Confirms the way we've been doing things . . .
 - Attenuation Factors
 - Multiple Lines of Evidence
 - Preemptive Mitigation
- Exposure Controls \neq Subsurface Source Remediation

New VI Guidance

Petroleum Vapor Intrusion – Fundamentals of Screening, Investigation, and Management (ITRC, 2014)

(aka, ITRC PVI Guidance)

- **Key Concept – Aerobic Degradation**
 - Groundwater
 - Soil Gas in the Vadose Zone
- **Two Key Components of Site Screening**
 - Lateral Inclusion Zone
 - Vertical Screening Distance

New VI Guidance

Technical Guide for Addressing Petroleum Vapor Intrusion at Leaking Underground Storage Tank Sites (OUST, 2015)

(aka, EPA PVI Guidance)

- **USTs Only**
- **Lateral Inclusion Zone**
- **6 ft. Vertical Separation Distance for Dissolved**
(vs. 5 ft. for ITRC)
- **15 ft. Vertical Separation Distance for LNAPL**

Looking ahead . . .

- DOR Screening Levels and RSLs
- DOR VI Mitigation Matrix (?)
- DOR Website as Resource
 - VI and RA Guidance (EPA, DOR, other States)
 - Other VI/Risk Policies, SOPs, Resources, etc.

Questions?

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